

Remarks

Reconsideration of the above-identified application in view of the present Amendment and remarks is respectfully requested.

By the present Amendment claims 16, 93, 104 and 105 have been amended, claim 109 has been cancelled, and new claims 113-114 have been added. Thus, claims 1-4, 7-9, 14, 16-17, 80-81, 84-85, 88-89, 92-94, 98-108 and 110-114 are pending.

Claim 109 was rejected under 35 U.S.C. § 112, first paragraph. Claim 109 has been cancelled. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 112, first paragraph rejection.

Claim 109 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants have amended claims 104 and 105 as suggested by the Examiner in ¶6 of the Office Action. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 112, second paragraph rejection.

Claims 1-4, 7-9, 14, 16-17, 80-81, 84-85, 88-89, 92-94, 98, 103, 107 and 109-112 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,214,777 to Li et al., hereinafter *Li*. Applicants respectfully traverse this rejection.

The present invention is directed at providing an improved industrial cleaning composition for cleaning metal surfaces, such as for beverage cans and containers made of aluminum and aluminum-containing alloys, during the metal forming process. One of the inventors, Dr. Gary Rochfort, has worked in this technical field for more than 20 years. Attached is his Declaration in support of this amendment. His extensive background in this field is set forth in ¶¶ 1-4 of the attached Declaration hereinafter referred to as the Rochfort Declaration.

Cans and other containers made of aluminum and alloys thereof, as a result of their forming operation, often contain lubricants, forming oils and residual aluminum fines on the metal surfaces. (Rochfort Declaration, ¶ 6.) Acid etching is needed, and provided by the claimed composition to remove the metal fines. (Rochfort Declaration ¶ 2.) Thus, the cleaning composition of the present application is particularly useful for cleaning aluminum and aluminum alloy materials (as well as other metals) to remove and dissolve (aluminum) fines and for cleaning lubricating oils from the metal.

The prior art does not disclose, teach or suggest the claimed cleaning composition for formed metal articles. (Rochfort Declaration ¶ 7.) Due to the demands of this cleaning process, the prior art has used very different cleaning compositions than what is being claimed. (Rochfort Declaration ¶¶ 7-9.)

After considerable research, applicants invented a suitable low cost cleaning composition for formed metal that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability.

Claim 1 recites:

1. A cleaning composition for formed metal articles, the cleaning composition comprising water and:

A) an ethoxylate of an alcohol present in an amount from about 0.1 to 3 g/l, the alcohol having Formula I:



wherein R₁ is a saturated or unsaturated, straight-chain or branched alkyl having from 12 to 25 carbon atoms and the ethoxylate is a 10 to 41 mole ethoxylate;

B) an inorganic pH adjusting component present in an amount such that the pH of the cleaning composition is less than 2; and

C) at least one nonionic surfactant that is different than component A present in an amount from about 0.1 to about 3 g/l,

wherein the cleaning composition has a water-break-free percent from 84% to 100%.

The prior art does not disclose, teach or suggest the claimed invention.

Li would not be considered a useful starting point by a skilled person seeking to make an acidic cleaner that is low-foaming enough for use in an industrial car wash. (Rochfort Declaration ¶ 10.) *Li* cannot be considered a proper reference. It is not analogous to the present invention. (Rochfort Declaration ¶11.) As acknowledged in the Office Action in paragraph 6, *Li* teaches a lubricating composition to lubricate containers and/or conveyors - not a cleaning composition for cleaning metal surfaces, such as for cans made of aluminum and aluminum-containing alloys.

A reference qualifies as prior art for a determination under § 103 when it is analogous to the claimed invention. *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992). “Two separate tests define the scope of analogous art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). “A reference is reasonably pertinent if. . . it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering his problem.” *Clay* 966 F.2d at 659. “If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection.” *Id.*

Innovation Toys, slip opinion at pages 12-13 (emphasis added).

Li is directed to a PET-compatible, anti-microbial lubricant composition, which is not directed to the same field of endeavor as Applicant. (Rochfort Declaration ¶ 12.) A lubricant is very different from a metal cleaner. (*Id.*) The lubricant composition of *Li*, contrary

to a cleaning composition, must remain on the metal material to provide a lubricating effect. (Id.) It is not removed to provide a cleaning effect. (Id.) Moreover, the lubricant composition of *Li* is used during the conveying and filling of the containers. (Id.) In contrast, the present invention is used to clean metallic articles, such as containers, after the metal forming step and before other products are applied to the can in order to present a metal surface with minimal organic contaminants and fines. (Id.)

In view of the above, in order to be a proper reference, *Li* must be directed to the particular problem with which the invention is involved. *Li* is not. (Rochfort Declaration ¶ 13.) As set forth above, Applicants endeavored to provide a suitable low cost cleaning composition for formed metal that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability while avoiding undesirable materials like hexavalent chromium compounds. *Li* is directed to providing a lubricant that stays on the can and is compatible with the PET containers. (Id.) Col. 3, ll. 2-6. *Li* has nothing to do with the inventors' problem. (Id.)

Thus, *Li* is non-analogous and the rejection should be withdrawn.

Even if *Li*, assuming *arguendo*, were considered to be a suitable reference, it would not disclose, teach or suggest all of the limitations of claim 1.

Li discloses a composition having a pH of 3 to 9.5. Notably, claim 1 recites that the pH of the cleaning composition is less than 2. With pH being measured on a logarithmic scale, the difference between a pH of 3 and a pH of 2 is patentably distinct. Applicants take exception with the Patent Office's statement that "with respect to the pH of the composition, as the 'word' about permits some tolerance, the lower pH limit of about 3 may be considered to read on pH less than 2." A pH of less than 2 renders the composition quite acidic. In setting the pH range of 3 to 9.5, as *Li* does, *Li* is purposely avoiding the various acidic pH of 2 and less.

While the term "about" may provide some tolerance, it is unreasonable to grant such a wide tolerance that would allow *Li*'s pH of about 3, to read on a pH of less than 2. A pH of about 2 10 times more acidic than *Li*'s pH of 3. (Rochfort Declaration ¶ 13.) *Li*'s pH of 3 provides 90% fewer moles of hydrogen ions than applicants' pH of 2. (Id.) pH is measured on a logarithmic scale. (Id.) As a result, each whole pH value below 7 is ten times more acidic than the next higher value. (Id.) For example, pH 2 is 10 times more acidic than pH 3 and 100 times (10 times 10) more acidic than pH 4. (Id.)

Applicants respectfully submit that the cases the Examiner cites to are not applicable. None are related to pH or logarithmic scales and none are to disclosed values that are as disparate as the values at issue here. Surely the term "about" should not be intended to cover a value 10 times greater than the value it modifies.

Moreover, the Patent Office acknowledges that the "water-break-free" limitation is not disclosed, taught or suggested in *Li*, but states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect the composition of *Li* to have similar water-break-free percent reductions as those recited because similar ingredients have been utilized. (Emphasis added.) Applicants respectfully disagree with this statement. *Li*'s composition cannot be considered to be substantially similar to the claimed composition. (Rochfort Declaration ¶ 16.) *Li*'s primary ingredient is a quaternary phosphonium compound. Such a component is not found in Applicants' composition and is not considered needed or suitable for use in an industrial cleaner such as Applicants' composition. The low pH of Applicants' composition make this antimicrobial compound unnecessary. (Id.) Due to the presence of the quaternary phosphonium compound it would not be reasonable to expect the *Li* composition to give a similar water-break free result. (Id.)

Furthermore, it would not have been obvious, as the Patent Office suggests, to select a specific surfactant combination from the broadly recited group of *Li*'s surfactants. There is no suggestion anywhere, other than Applicants' own disclosure, to select the specific claimed

surfactant combination from *Li's* broadly recited list. Applicants take exception with the Patent Office's statement on page 4 of the Office Action that:

[I]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared a composition comprising a combination of nonionic surfactants in their optimum proportions wherein one contains a 40 mole ethoxy group, and another with a lower ethoxy group because it is taught by *Li* at column 7, lines 52-53 that one or more surfactants may be used, and to optimize the ethylene oxide and alky groups of the nonionic surfactants because it has been held to be obvious to select a value in a known range by optimization for the best results. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima facie* case of obviousness. (Emphasis added.)

Even using *Li*, as a starting point, it would not have been obvious to select a specific surfactant combination from the broadly recited group of *Li's* surfactants. (Rochfort Declaration ¶ 17.) There is no suggestion, in the prior art to select the specific claimed surfactant combination from *Li's* broadly recited list. (Id.) *Li* in stating that "one or more surfactants may be used" does not make it obvious to provide a combination of nonionic surfactants in their optimum proportions wherein one contains a 40 mole ethoxy group and the other with a lower ethoxy group. (Id.) There is no teaching in *Li* to provide such a combination. (Id.)

Furthermore, the skilled person is not choosing from a finite number of identified and predictable solutions to the problem. (Rochfort Declaration ¶ 18.) The Patent Office is essentially making an obvious to try argument, but the list of surfactants from both references is extensive. (Id.) This is not routine experimentation, particularly where our own results in the Examples of the application show that the performance of surfactants is unpredictable. (Id.)

Li's broad statement that "one or more than surfactants may be used" does not lead one of ordinary skill in the art at the time of Applicants' invention to select the claimed components in the claimed proportions. (Rochfort Declaration ¶ 19.) *Li is directed to a lubricant – not a metal cleaner.* *Li's* invention has nothing to do with providing Applicants' type of composition. (Id.) Even if it did, this does not amount to optimization of results effective variables. The listing of multiple surfactants that can be used in a lubricant does not give rise to optimization of a results effective variable. A result effective variable only is a variable (parameter) that has been found to achieve a recognized result.

Furthermore, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.).

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejection of claim 1 in view of *Li*.

Claims 2-4, 7-9, 14, 16-17, 101-103, 106-108 and 110-114 all depend either directly or indirectly from claim 1 and are therefore allowable for at least the same reasons as claim 1. Moreover, these claims add further limitations that render them separately allowable.

Independent claim 80 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Claims 81, 84-85, 88-89, and 92-94 all depend either directly or indirectly from independent claim 80, and are therefore allowable for at least the same reasons as independent claim 80.

Independent claim 98 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Claims 1-4, 7-9, 14, 16-17, 80-81, 84-85, 88-89, 92-94, 98, 101-103 and 107-112 were rejected under 35 U.S.C. § 103 as being unpatentable over *Yianakopoulos*, hereinafter *Yianakopoulos*. Applicants respectfully traverse this rejection.

To begin with, *Yianakopoulos* is not a proper reference. It is not analogous to the present invention. (Rochfort Declaration ¶ 20.) *Yianakopoulos*, which is assigned to Colgate-Palmolive, is directed to an all-purpose household liquid detergent designed to protect enamel surfaces from acid attack, (Col. 1, ll. 14-18.) (Rochfort Declaration ¶20.) Again, the present claims are directed to a cleaning composition for cleaning metal surfaces, such as for cans made of aluminum and aluminum-containing alloys via etching. One of skill in the art would expect *Yianakopoulos*' household detergent to be non-metal etching in order to protect household metal surfaces, such as plumbing fixtures. (Id.) *Yianakopoulos* specifically teaches "an anti corrosion system to protect acid-sensitive surfaces", which directly contradicts Applicants' need for a certain amount of acid etching to remove metal fines. (Id.)

Yianakopoulos is not directed to the same field of endeavor as Applicant. (Rochfort Declaration ¶ 21.) As discussed above, *Yianakopoulos* discloses all-purpose household liquid detergents, which recites a long list of potential surfactants, including nonylphenol ethoxylates. (Id.) In contrast, the present invention is used to clean metallic articles, such as containers, in an industrial can washer at high agitation, which requires specific combinations of surfactants to avoid foaming and phase separation. (Id.) Cleaning compositions

for household liquid detergents act very differently than cleaning compositions for metal surfaces, such as cans made of aluminum and aluminum-containing alloys. (Id.) Foaming in household detergents and *Yianakopoulos* is considered desirable, see Col. 15 line 50-54. (Id.) *Yianakopoulos* does not recognize the problem of foaming in industrial spray cleaners and does not distinguish between foamy and non-foamy surfactants. Instead, *Yianakopoulos* suggests adding silicone for “objectionable foaming”; silicone is known in the container art to cause label and coating adhesion failure. (Id.)

Thus, in order to be a proper reference, *Yianakopoulos* must be directed to the particular problem with which the invention is involved. *Yianakopoulos* is not. As set forth above, Applicants endeavored to provide a suitable low cost cleaning composition for formed metal that has the requisite detergency, is stable, safe, low foaming, and has improved biodegradability while avoiding undesirable materials like hexavalent chromium compounds. *Yianakopoulos* is directed to providing an all-purpose household liquid detergent that minimizes corrosion. Col. 3, ll. 34-37. *Yianakopoulos* accomplishes this by providing an anti-corrosion system. Col. 3, ll. 39-41. *Yianakopoulos* has nothing to do with the inventors’ problem. Thus, *Yianakopoulos* is non-analogous and the rejection should be withdrawn.

Even if *Yianakopoulos*, assuming *arguendo*, were considered to be a suitable reference, it would not disclose, teach or suggest all of the limitations of claim 1.

Yianakopoulos does not disclose, teach or suggest a cleaning composition comprising an ethoxylate of an alcohol having 12 to 25 carbon atoms and 10 to 41 mole ethoxylate and another nonionic surfactant different from the first and it would not have been obvious to do so in view of *Yianakopoulos*. (Rochfort Declaration ¶ 22.) Applicants’ invention is a specific composition which provides a desired result as a cleaning composition for formed metal articles. (Id.) The skilled person is not choosing from a finite number of identified and predictable solutions to the problem. (Id.) It was not routine experimentation to arrive at the

claimed composition, particularly where our own results show that the performance of surfactants is unpredictable. (Id.)

With respect to providing unexpected results, Applicant's examples show the benefit and unexpected results of the invention are shown. As the examples show, the cleaner composition for metal surfaces is an unpredictable art. (Rochfort Declaration ¶ 23.) The results show that Applicants, who are quite skilled in the can cleaner art, did not find predictability in achieving the combination of features sought, specifically, water break free, low foam, and little re-deposition of the soil on the cans. (Id.)

Furthermore, again this is not a result effective variable and thus the Patent Office's rationale does not apply. A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.).

Yianakopoulos fails to exhibit a water-break-free percent reduction as claimed, Applicants contend that it would not be obvious that *Yianakopoulos* composition would have such a water-break-free percent reduction since they are directed at entirely different usages and have very different compositions.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103 rejection of claim 1 in view of *Yianakopoulos*.

Claims 2-4, 7-9, 14, 16-17, 101-103, 106-108 and 110-114 all depend either directly or indirectly from claim 1 and are therefore allowable for at least the same reasons as claim 1. Moreover, these claims add further limitations that render them separately allowable.

Independent claim 80 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Claims 81, 84-85, 88-89, and 92-94 all depend either directly or indirectly from independent claim 80, and are therefore allowable for at least the same reasons as independent claim 80, as well as for their own specific reasons.

Independent claim 98 recites similar limitations as does independent claim 1 and is therefore patentable for substantially the same reasons as independent claim 1, as well as for its own specific limitations.

Applicants note the allowance of claims 99 and 104 with appreciation.

Claim 106 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Li* or *Yianakopoulos* as applied to the above claims, and further in view of *Colurciello, Jr. et al.* (U.S. Patent No. 6,559,111), hereinafter *Colurciello, Jr.* Claim 108 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Li* as applied to the above claims and further in view of *Yianakopoulos*. Applicants respectfully traverse these rejections. Claims 106 and 108 depend either directly or indirectly from claim 1 and are allowable for at least the same reasons as claim 1, as well as for their own specific limitations.


Claims 113 and 114 have been added. The prior art does not disclose, teach or suggest the limitations of these claims.

Applicants submit that the claims are in condition for allowance and respectfully request a notice to that effect. If the Examiner believes that a discussion or claim amendment of a minor nature would advance the prosecution of the application, the Examiner is highly encouraged to telephone the Applicants attorney at the number given below.

The one month Petition fee of \$150 and the additional claims filing fee of \$60.00 pursuant to 37 C.F.R. § 1.17(a) is being charged to our Deposit Account No. 02-3978 via electronic authorization submitted concurrently herewith. Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

ANDREW M. HATCH ET AL.

By: 

Michael S. Brodbine
Reg. No. 38,392
Attorney for Applicants

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BROOKS KUSHMAN P.C.
1000 Town Center, 22nd Floor
Southfield, MI 48075-1238
Phone: 248-358-4400
Fax: 248-358-3358